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ABSTRACT

The purpose of this ethnographic study was to describe children's verbal information-seeking behavior in different naturalistic settings and to explore factors in those settings other than school which might have bearing on a child's propensity to seek information in school. Subjects were six girls in the same sixth grade classroom. Audio and video tapes were made of their spontaneous interaction at home with their parents, in large and small groups at school, and in peer groups. Interaction from the tapes was transcribed verbatim and instances of information-seeking behavior were classified by form as interrogative or non-interrogative and by function as high or low level. Frequencies and percentages of instances classified by form and function were calculated across all settings and by subject. The major findings of the study pertained to mothers of children who were active information-seekers in all settings. These mothers (1) recognized and responded directly to their children's information-seeking behavior, (2) encouraged their children to persist in information-seeking behavior until the children received answers, and (3) modeled information-seeking behaviors themselves. (Author/MP)

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EFFECTS OF NATURALISTIC SETTINGS ON SPONTANEOUS VERBAL INFORMATION-SEEKING BEHAVIOR OF 6TH-GRADE GIRLS

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Abstract: The purpose of this ethnographic study was to describe children's verbal information-seeking behavior in different naturalistic settings and to explore factors in those settings other than school which might have bearing on a child's propensity to seek information in school. Subjects were six girls in the same 6th-grade classroom. Audio and video tapes were made of their spontaneous interaction at home with their parents, in large and small groups at school, and in peer groups. Interaction from the tapes was transcribed verbatim and instances of information-seeking behavior were classified by form as interrogative or non-interrogative and by function as high or low level. Frequencies and percentages of instances classified by form and function were calculated across all settings and by subject. The major findings of the study were regarding mothers of children who were active information-seekers in all settings: (a) They recognized and responded directly to their children's information-seeking behavior. (b) They encouraged their children to persist in information-seeking behavior until the children received answers. (c) They modeled information-seeking behaviors themselves.

Children's questions have been described as important to children's intellectual development (Bruner, Olver, & Greenfield, 1966; Cazden, 1970) and as an indicator of their thinking behavior (Berlyne, 1970; Fahey, 1942; Piaget, 1926). In terms of stimulus-response learning theory, children's questions themselves represent what Berlyne (1965) and Isaacs (1930) identify as an "epistemic" response, that is, a response which is caused by conceptual conflict, which motivates the child to seek information, and which is reinforced by acquisition of knowledge. Corresponding to Bruner's concept of the organization and functioning of the cognitive structure, Ross and Balzar (1975) found that children's retention of information increased when they received answers to their own questions.

Research on questions has examined both teachers' questions and children's questions. Research on teacher questions has, in general, emphasized the analysis and improvement of teachers' questions (Bellack, Hyman, Smith, & Kliebard, 1966; Flanders, 1960; Ladd and Andersen, 1970; Manson & Clegg, 1970; Nuthall & Lawrence, 1965; Riegle, 1976; Sanders, 1966; Smith & Meux, 1962; Taba, 1966).

Research on children's questions has been conducted:

1. To describe the development of the interrogative form in children's verbal behavior (Brown, 1968; Klima & Bellugi-Klima, 1971; Savic, 1975).
2. To explore the function of questions in children's cognitive development (Berlyne, 1965; Davis, 1932; Isaacs, 1930; Meyer & Shane, 1973; Piaget, 1926).
3. To observe and explain the role of questions in social interaction (Garvey & Baldwin, 1970, 1971; Mishler, 1975; Saxe & Stollack, 1971).

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4. To use in developing curriculum or teacher education programs based on children's interests (Baker, 1943).

5. To observe or train children in specific question-asking skills (Allender, 1970; Dodl, 1966; Mosher & Hornsby, 1966; Torrance, 1970a).

Studies in language acquisition, cognitive development, and sociolinguistics have generally focused on only one setting: either the home or the classroom or a laboratory situation (Dore, 1977; Saxe & Stollack, 1971; Smith, 1933). Classroom questions studies have predominantly dealt with contrived problem-solving situations (Suchman, 1962; Torrance, 1970a, 1971).

In the literature on questioning, the comment is repeatedly made that there is a lack of questioning by children in schools, especially as the children grow older (Boller, 1973; Dodl, 1966; Fahey, 1942; Heunecke, 1973). Blank and Covington (1965), who share this view, referred to the failure of children to ask questions as a "basic handicap" which "may result in premature and faulty inferences based on insufficient information, and in a paucity of solution ideas" (p. 21).

Children will be more likely to become questioners if parents and teachers encourage children to ask questions and if they answer the children's questions (Berlyne, 1970; Robinson, 1972). Haupt's (1966) subjects had more extended questioning sequences in unstructured child/teacher conversations at lunch period than in teacher-structured classroom interaction. Zahorik (1971) suggested that children learn through their own questions in spontaneous situations outside of school.

Lee (1977) stated, "A frequently overlooked need in education is simply to know what is happening" (p. 3). This "need to know" as it relates to children's questions has generally been pursued under experimental conditions in single settings. The present study examined spontaneous verbal information-seeking behavior of children in three naturalistic settings and generated hypotheses regarding interaction in settings other than school which might have instructional implications. (Terms used in the study are defined in Appendix A.)

Method

Subjects

The subjects for the present study were six Anglo girls who were in the same 6th grade class in a private elementary school in Austin, Texas. The girls were 11 to 12 years of age and all families had both parents living in the home. Parents of the children were all professional people, some having advanced degrees. Six subjects was considered to be a reasonable sample size for a naturalistic study and should reflect a variety of types of information-seeking behavior across three settings. Since the focus of the study was children's verbal information-seeking behavior, subjects who were as much alike as possible were selected in order to control confounding variables of sex, age, socio-economic-status, home environment, and educational level of parents.

Procedures

Data Collection. Verbal permission to videotape in school was obtained from the principal and one 6th-grade teacher and a schedule for taping was arranged. At a meeting in the individual homes, six mothers gave written approval for themselves and their children to participate in the study. They

received cassette tapes and portable recorders and were told to tape three one-half hour segments during normally-occurring family interaction. The principal, teacher, parents and children were told only that the study involved analysis of interaction in the three settings so that the conversation would not be forced to elicit questioning sequences.

In order to obtain three one-half hours of classroom interaction of each subject, four segments were videotaped. Two were large-group social studies and science discussions; two were small-group situations. The child/child interaction was audiotaped in three one-half hour situations at a slumber party attended by all six subjects.

All interaction from the three settings was transcribed verbatim into typewritten form. Parents provided verbal explanations of the situations taped in the parent/child interaction.

Reliability. Revision of the system developed by the researcher to classify information-seeking behavior was made (Appendix B), reflecting feedback from education faculty members from The University of Texas at Austin. The researcher and three additional raters who were experienced in elementary education then classified information-seeking instances after listening to a 27-minute cassette tape which contained excerpts from each of the six sets of parent/child tapes and one excerpt from the child/child situation. The percentage of agreement between each rater and the researcher was calculated to establish the reliability of the researcher to classify the behavior. The results were as follows: Rater 1/researcher, 74%; Rater 2/researcher, 88%; Rater 3/researcher, 91%.

Analysis of Data. All instances of information-seeking behavior by children and mothers were classified by Type/Sub-Type by the researcher as either IA, IIA, IB, or IIB. The instances of children's information-seeking behavior were grouped by the following settings: (a) home setting, (b) combined large and small group school setting, (c) large group school setting, (d) small group school setting, or (e) peer group setting. In each of those settings, the number of each Type/Sub-Type was totaled considering all six of the subjects, and the number of instances of information-seeking behavior was totaled for each subject individually. From the home setting, all instances of information-seeking by mothers were counted for each Type/Sub-Type classification.

For each of the settings the percentage of each Type/Sub-Type classification was calculated considering all children together and considering each child individually. The relationship of the totals of each Type to each other by setting and by individual child was calculated. The relationship of totals of each Sub-Type to each other by setting and by individual child was calculated.

As suggested by the review of literature, these calculations were used to analyze data with respect to modeling of the behavior, role-appropriate behavior in different settings, influence of size of group on number and focus of questions, importance of immediate environment on information-seeking behavior, and the transfer of information-seeking training from setting to setting.

Limitations. Generalization of the findings in the present study is limited by: (a) size of the sample, (b) similarity of socio-economic status of sample, (c) sex of the subjects, (d) attendance of subjects at a private school, (e) relatively high achievement level of all children, and (f) educational level of parents.

Results

The classification system developed for the present study was used to code all instances of information-seeking behavior by each child in all settings and by each adult in the home setting. IA utterances were lower cognitive level in function and interrogative in form (e.g., "Is up and down latitude or longitude?"). Classification IIA utterances were non-interrogative in form and higher cognitive level in function (e.g., "How did they teach him to do that?"). IB utterances were interrogative in form and lower cognitive level in function (e.g., "I'm sure you're getting a little tired of that"). Higher cognitive level function and non-interrogative form were characteristics of classification IIB utterances (e.g., "It makes her feel like you don't like here and that you don't like my friends").

Table 1 is a summary of the frequency and percentage of instances of information-seeking behavior by all six subjects combined in each setting. The home setting yielded the largest total frequency of instances of information-seeking behavior. Utterances by the children in the home setting represent 69.7% of the total instances of the behavior. The smallest frequency of instances (12.7% of the total instances) was produced in the school setting. Twenty-four percent of those instances in the school setting (3% of total instances) occurred in the large group school situation; 76% in the small group school situation. Across all settings, the greatest frequency of instances was classified as category IA (81% of the total frequency); the smallest frequency of instances was in classification IIB (3% of the total frequency).

Table 2 is a summary of the frequency and percentage of information-seeking behavior by all adults in the home setting. The largest total frequency of instances of information-seeking behavior occurred in classification IA (88% of the total instances); the smallest frequency occurred in classification IIB (1% of the total instances). The total frequency of instances of information-seeking behavior by the adults in the home setting was greater than the total frequency of instances of the behavior of the children in all settings combined.

Considering the profiles of each subject in the various settings, the greatest frequency of instances of information-seeking behavior for each child occurred in the home setting. Of the six subjects, five had the smallest frequency of instances in the combined school setting. (Subject C had the smallest frequency of instances in the peer setting.) Of the six children in the school setting, five subjects had the greatest frequency in the small group setting. In the school setting, Subject B had more instances of information-seeking behavior in the large group setting than in the small group setting. Subject A had no instances of information-seeking behavior in the large group school setting.

For the six subjects considered individually across all settings, the greatest percentage of utterances was classified as IA. For five of the six subjects, the smallest percentage of instances was classified as IIB. For Subject B instances classified as IIB represent the second largest category of classification across all the settings. Five of the six subjects had no instances of information-seeking behavior outside the home setting which were classified as IIB. Subject B is the exception. Subject E had no instances of information-seeking behavior classified as IIB in any setting.

Table 1

Summary of Frequency and Percentage
of Information-Seeking Behavior by Children for Various Settings

Setting	F[a](%) by Classification				TOTAL F (%)
	IA	IIA	IB	IIB	
Home[b]	394 (81)	40 (8)	32 (7)	21 (4)	487 (69.7)
School					
Combined[c]	63 (71)	9 (10)	16 (18)	1 (1)	89 (12.7)
Class	10 (47.6)	6 (28.6)	4 (19)	1 (4.8)	21 (3.0)
Group	53 (78)	3 (4)	12 (18)	0 (0)	68 (9.7)
Peer[d]	110 (89)	7 (6)	6 (5)	0 (0)	123 (17.6)
Total	567 (81)	56 (8)	54 (8)	22 (3)	699 (100.0)

[a]Frequency (F)

[b]Three one-half hour sessions for five subjects; two one-half hour sessions for one subject.

[c]Two one-half hour sessions in class and one in group for five subjects; two one-half hour sessions in group and one in class for one subject.

[d]Three one-half hour sessions for all subjects.

Table 2

Summary of Frequency and Percentage

of Information-Seeking Behavior by Adults in Home Settings

F[a] (%) by Classification				
IA	IIA	IB	IIB	TOTAL F (%)
721 (88)	49 (6)	38 (5)	9 (1)	817 (100)

Note. Five home sessions had three one-half hour tapes; one had two one-half hour tapes.

[a]Frequency (F)

Looking at the adult/child pairs in the home setting, each adult had a greater frequency of instances of information-seeking behavior than did the corresponding child. Considering the four classification categories, each adult had the greatest percentage of instances classified as IA. Each one had the smallest percentage of instances classified as IIB. There were no instances classified as IIB utterances for three of the adults (D, E, and F).

Conclusions

The major finding of the present study is that children do know how to seek information. It is possible that factors in the home setting influence whether or not a child will seek information in other settings.

The propensity of mothers with higher educational levels to elicit questioning interaction with their young boys was reported by Saxe and Stollack (1971). The mothers in the present study all had undergraduate degrees, yet the data collected demonstrate a wide variety of information-seeking interaction between these mothers and children.

The home interaction of these six sets of children and adults seems to have marked influence on the children's information-seeking in other settings. Robinson (1972) assumed that there are similarities in children's questions at home and at school. In the present study similarities were observed between some mother's information-seeking behavior and the child's information-seeking behavior in other settings. Robinson's conclusion that responses to a child in the home may have bearing on the child's tendency to question in other situations is more pertinent to the present study. In this study, the response-type that was present in mothers whose children demonstrated the ability and inclination to seek information in the large group school setting was one that was sensitive to the child's information-seeking in interrogative and non-interrogative forms and that encouraged the child to persist until the question is answered. The mother whose child (Subject B) was most persistent in seeking information in settings other than the home modeled information-seeking behavior herself. The child frequently observed her mother questioning and persisting to find an answer.

Dodl's (1966) conclusion that the teacher's conscious verbal reinforcement of children for questioning behavior increased that behavior could not be observed from these data because there were no statements such as,"That was a good question" in any setting in the present study. However, mothers did attend and directly respond to their children's questioning behavior which may have been reinforcing to the child and possibly increased the child's inclination to seek information in other settings.

Haupt (1966) found few extended sequences of teacher/child interaction with pre-school children in the teacher-structure class time. Dodl (1966) found that children assuming the role of the teacher in class discussion asked more questions, even if they were lower level questions, than they did when the teacher led the discussion. In the present study, those findings are applicable. There were few instances of information-seeking by children in the large group school situation. Those subjects who were successful in engaging in extended sequences in the large group setting demonstrated persistence. However, in the small group school setting Subject F was questioned by Subject C in several extended sequences. In these sequences, it was Subject C who

in the role of the pupil who asked questions of Subject F who was in the role of the information-provider. This observation, which contradicts Dodl's finding, may be explained by the responsiveness of Subject E to Subject C's questioning. Michler's (1975) finding that control of conversation is more equal in peer interaction than in adult/child interaction seems to apply in this case. In the present study, it was generally in the large group class sessions that the adult/child interaction was controlled by the adult. In both the home settings and the peer settings most interaction was more balanced in terms of control. It seems that most of these children have ways of sharing control in the home and peer settings that they do not have in the large group school setting unless they are persistent. It is possible that the responsiveness of the smaller group members to each other is a factor that does not exist in the large group school situation.

Optimal group size to increase children's questioning behavior was four to six children per group as reported by Torrance (1970a). A general finding of the present study is that a greater frequency of information-seeking by the subjects occurred in sessions other than the large group school sessions. However, two of the subjects were effective in seeking information in the large group, and two of the subjects had few instances of information-seeking behavior in any size group larger than one-to-one. Size of group which relates to increased information-seeking behavior by children seems to be an individual matter, again related to the child's persistence and the responsiveness of the responder(s).

Davis' (1932) conclusion that children ask more questions of adults than of other children is consistent with the findings of the present study. All children had a greater frequency of information-seeking behavior in the home setting than in other settings. But, all had more instances of information-seeking in child/child settings than in the large group school setting. It is also interesting to note that in the home setting the adult asked more questions of the child than the child did of the adult.

The role the child played as information-seeker or information-provider did not seem to vary so much from setting to setting as it did to change with circumstances. "Experts" among the children were often questioned more than they sought information, and "babysitting" decreased the instances of the behavior for one of the subjects. Subject B, whose mother demonstrated the greatest amount and diversity of information-seeking behavior in the mother/child interaction, was a particularly effective information-seeker in all settings. Her confident information-seeking behavior suggested that she fully expected adults and children to respond to this behavior.

That questioning behavior predominantly focuses on the immediate environment as reported by Davis (1932) and Robinson (1972) is consistent with the finding of this study if "immediate environment" includes reference to things outside the environment but related to school lesson content. However, it is significant that approximately 35% of these child/adult questions focused on discussion of ideas or values, people not present, and decision-making, all of which were not interpreted as relating to "immediate environment" by this researcher.

Torrance's (1970b) finding that manipulation of objects increased questioning behavior of pre-school children is not totally supported by the data for the current study. In these naturalistic settings observation of objects, such as eggs boiling in a pot and animals often stimulated information-seeking by the subjects even though no manipulation of the object was done by the child. Manipulation of a globe by one child in the small group school setting was helpful as she sought information about latitude and longitude. It is possible that age makes a difference with regard to the need to manipulate objects in order to seek information.

objects in order to seek information.

The observation that test-type questions are frequent by the teacher in the school setting (Cazden, 1970) is verified by the data for the present study. Test-type questions were also frequently observed in the home setting. No test questions were observed in the peer setting.

Implications for Future Research

Suggestions for future research on children's information-seeking behavior are listed below:

1. Since this study was limited to girls of one grade level, similar data should be collected and analyzed on boys and on children of different grade levels.
2. Since the parents of these subjects were all of high educational level, similar data should be collected on children whose parents are of lower educational levels.
3. Since this study was conducted in a private school, a similar study should be done in a public school setting.
4. Inclusion of intelligence and achievement data for subjects would allow for observations about the relationship of intelligence and achievement to children's information-seeking behavior and should be a part of a future study.
5. Interviews iwth parents and the teacher of the current study regarding the importance of information-seeking and the child's use of information-seeking behavior in her learning should be conducted and related to the data collected for the study.
6. This study did not look at the position of the child in the family and its relationship to information-seeking behavior. Literature in the field of child development should be reviewed and related to data for this study.
7. A study should be conducted which involves intitial observation of teachers, in-service education of teachers, and post-observations of the teachers. Training of teachers would include emphasis on teacher's modeling of information-seeking behavior by children in both interrogative and non-interrogative forms, and on strategies such as allowing time for children to seek information which may be tangential to the topic being discussed. Analysis of data would focus on the comparison of children's information-seeking behavior before and after the teacher's in-service education program as well as the teacher's implementation of the in-service training.
8. It would also be interesting to look at teacher/child in one-to-one interaction to see if what makes home influence seem so powerful is actually one adult in itneraction with one child.

Hypotheses

The following hypotheses were generated by the researcher regarding children's information-seeking behavior to be tested by future studies:

1. Adults can increase instances of information-seeking behavior by children in large groups settings by modeling information-seeking behavior themselves.
2. Information-seeking behavior by children in school is greater in small groups than in large groups.
3. On task information-seeking behavior in small groups at school is greater for groups which have been given a specific task rather than allowed to work in groups without having an objective stated in advance by the teacher.
4. The observation of phenonema in naturalistic settings is as effective

a stimulus to information-seeking for children of school age as is manipulation of objects.

5. A study which excludes procedural questions and includes non-interrogative forms will yield more information of value regarding children's questioning behavior in the classroom setting than one which includes procedural questions and excludes non-interrogative forms.

6. A teacher who is responsive to children's information-seeking behavior in interrogative and non-interrogative forms and who allows children to seek information tangential to the topic under discussion will have pupils who seek information in large groups in school.

The study of children's information-seeking behavior is an area that merits additional research. One tenable approach has been suggested by the present study.

Appendix A

Definition of Terms

Terms used in the present study are based on the relationship of language function and form. Language function is, in general, the use the speaker intends the utterance to have (e.g., to seek information, to state a fact, to give an opinion). Language form is divided into two broad types based on grammatical structure: interrogative and non-interrogative.

Interrogative form is marked by the use of an interrogative adverb (e.g., who, what, how), or by subject-auxiliary reversal (e.g., Can I, Will we, Does he), or by rising intonation at the end of an utterance that would otherwise be a statement. Non-interrogative form is marked by the absence of these markers. In the present study, the term "question" is used interchangeably with the term "interrogative (form)".

Because there are three identifiable types of subject-auxiliary reversal interrogatives, the form markers described above yield five interrogative types: (a) "wh" questions (also called "information questions"), which begin with a question adverb (e.g., who, where, why, how many, when, whose, which), such as, Where is my pencil? (b) "yes/no" questions which involve subject-auxiliary reversal in the main clause (e.g., Does that decide a game sometimes?); (c) "tag" questions, which append an inverted subject-auxiliary construction to a sentence that would otherwise be a statement (e.g., It is Tuesday, isn't it?); (d) "polar" questions, which include two propositions of which one is to be chosen (e.g., Are we going to have math or Spanish now?); and (e) "intonation" questions, which are declarative in form but add rising intonation and thus are marked as questions, such as, He just cusses alot?.

Information-seeking behavior can occur in either interrogative or non-interrogative form. The functions of the behavior for the present study are as follows: (a) seeks definition, (b) seeks a simple fact, (c) seeks preference for purposes of making decisions, (d) seeks repetition or elaboration for purposes of understanding or verifying meaning (not to hear or be heard), (e) seeks help remembering, (f) seeks to test (when asker knows the response sought), (g) expresses curiosity, (h) seeks elaboration with regard to motives, purposes, functions, causes, concepts, ideas, bases of rules or beliefs, or (i) seeks confirmation of hypotheses.

Notice that the definition of information-seeking behavior used in the present study excludes utterances which serve to initiate or maintain interaction, seek permission or approval, clarify procedure, check on attention of listener, request action or movement, or ask for repetition or clarificaiton of hearing or having been heard. Non-verbal behavior is also excluded.

	TYPE I FUNCTION[a]	TYPE II FUNCTION[b]
SUB-TYPE A Interrogative form or raised intonation (question mark would be used)	Seeks definition Seeks simple fact Seeks repetition or elaboration for understanding Seeks help remembering Seeks to test (asker knows answer)	Expresses curiosity Seeks clarification about these things: motives, purposes, functions, causes, concepts, or bases of rules or beliefs Seeks confirmation of hypotheses
SUB-TYPE B Non-Interrogative form (no-question mark would be used)	Seeks definition Seeks preference Seeks repetition or elaboration for understanding Seeks help remembering Seeks to test (asker knows answer)	Expresses curiosity Seeks clarification about these things: motives, purposes, functions, causes, concepts, or bases of rules or beliefs Seeks confirmation of hypotheses

[a]Defined as low cognitive level function following reliability study

[b]Defined as high cognitive function following reliability study

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